

In re application: Wen-Yen Hwang  
Filed: 11/13/2001  
Response Dated 12/02/2004

PAGE 2 OF 10

Serial No.: 09/993,239  
Attorney's Docket: PAT034US  
Reply to Office action of 10/28/2004

### AMENDMENTS TO THE SPECIFICATION

On page 1, please replace the Title with the following amended Title:

-- Method for Fabricating a VCSEL with Ion-Implanted Current-Confinement Structure --

On page 47, please

-- A Methods for fabricating a VCSEL having current confinement has , the VCSEL having a substrate, a semiconductor active region, and a bottom mirror disposed between the substrate and the active region. A first top spacer layer is epitaxially grown on the active region, the first top spacer layer comprising a current-spreading buffer layer disposed on the active region, a current-confinement layer disposed on the buffer layer, and a current-spreading platform layer disposed on the current-confinement layer, wherein the combined thickness of the platform and current-confinement layers is less than the thickness of the buffer layer. A current-confinement structure having an annular region of enhanced resistivity and a central aperture of comparatively lower resistivity is formed in the current-confinement layer using ion implantation. Subsequently, epitaxial regrowth is performed to form a second top spacer layer on the platform layer, said second top spacer layer comprising a top current-spreading layer. The resulting current-confinement structure is the result of a shallower ion implantation and thus has more precise dimensions and can be closer to the active region. --